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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/065,577	10/31/2002	Jason Shicpe	PES-0089	9779
23462	7590	02/23/2006	EXAMINER	
CANTOR COLBURN, LLP - PROTON 55 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002			BELL, BRUCE F	
			ART UNIT	PAPER NUMBER
			1746	

DATE MAILED: 02/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/065,577

Applicant(s)

SHIEPE, JASON

Examiner

Bruce F. Bell

Art Unit

1746

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 14-19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 October 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_.

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims, 1-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Murphy et al (U.S. 5,964,089).

Murphy et al disclose a control system which controls the operation of valves delivering hydrogen to a vehicle exhaust system, and also controls the generation of hydrogen by electrolysis. See abstract. The apparatus includes an oxygen/water separator, a hydrogen/water separator and/or a check valve to prevent backflow of hydrogen from a storage vessel. See col. 7, lines 55-60. Hydrogen produced at the cathodes of the electrolyzer is delivered under pressure to a hydrogen storage system comprising a hydrogen storage vessel alone or in communication with one or more additional hydrogen storage vessels. See col. 9, line 65 – col. 10, line 2. The system has valves that open to allow water to flow into tubing between valves and compresses the headspace in the vehicle stub. Valves open and close to allow compressed hydrogen into the stub to push captured water into the anode reservoir. The valves are controlled to maintain the water level in the vessel. See col. 10, lines 30-36. Hydrogen is delivered out of the storage vessel through a standpipe or from the top of the

vessel in operating the hydrogen delivery system. A first hydrogen valve and a second hydrogen valve and a region between the two valves has a defined volume. See col. 11, lines 8-12. A microprocessor controller is used to monitor and control the water level in the hydrogen storage vessel. A water outlet valve is opened so that the pressure in the vessel will drive water out of the vessel into the reservoir or supply line. When the water level is in an acceptable range, the valve is closed again. See col. 12, lines 4-8. The electrolyzer is a PEM electrolyzer. See col. 12, lines 28-29. Hydrogen gas generated by the electrolyzer is processed through a four stage process to remove entrained water (liquid or vapor) and any oxygen contaminant from the hydrogen stream before storage in the vessel. See col. 15, lines 36-40. The entrained liquid water is removed without pressure loss by means of the entrained liquid water trap. See col. 15, lines 42-44. The control outputs from the controller include lines to a dual valve subsystem for controlling the turning on and off of the valves, thus controlling the delivery of hydrogen to the exhaust manifold, catalytic converter or engine. See col. 20, lines 1-5. The controller has a sensor input line from a hydrogen pressure sensor. A high or low signal from the sensor will control when to turn on or off the electrolyzer through control output to the electrolyzer power source. See col. 20, lines 20-24. A cathode pressure sensor may be placed in fluid communication with the cathode electrolyzer to measure the pressure of gas at the cathode and send a signal indicative thereof on the sensor input line to the controller. The change in cathode pressure may provide a direct reading of the

hydrogen production rate. See col. 21, lines 7-12. An ambient hydrogen detector may be placed near the delivery system, to detect the presence of abnormally high levels of hydrogen in the ambient atmosphere and send a signal indicative thereof on a sensor input line to the controller. See col. 21, lines 31-35. During hydrogen generation in the electrolyzer, water is transferred from the anode side of the electrolyzer over to the cathode side due to electro-osmosis through the proton exchange membrane. This water eventually collects in the bottom of the storage vessel and is withdrawn and/or recovered using one or two valves. If two valves are used, then they may be plumbed in series and have a captive gas chamber between them. The valves may be opened one at a time with a fixed amount of water being pushed from the reservoir and compressing the headspace in the stub during the first half of the cycle and transferred to the anode water reservoir during the second half cycle. The water level is sensed using a sensor. Performance verification of this cathode water recovery system is concerned with complete opening and closing of the valves and of the accurate detection of water level. See col. 26, lines 20-38. See Figure 1 with respect to the disclosure set forth above.

The prior art of Murphy et al anticipates the applicant's instant invention as instantly claims, as shown by way of the disclosure set forth above. Murphy et al shows both the phase separation and water discharge both being disposed downstream of the electrochemical stack, with each of the phase separator and water discharge having two flow control devices, each, and being operable

connected to a control device that receives information from sensors for each of the phase separator and water discharge during operation. The sensors are in operational communication to both the hydrogen separator and water discharge areas. Therefore, the prior art of Murphy et al anticipates the instant invention.

### ***Response to Arguments***

3. Applicant's arguments, see "REMARKS", filed December 07, 2005, with respect to the rejection(s) of claim(s) 1-13 under 35 U.S.C. §102(b) as anticipated by Andrews et al (WO 98/42617) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Murphy et al (U.S. Pat. No. 5,964,089) as set forth above.

### ***Conclusion***

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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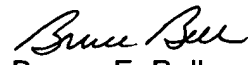
the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bruce F. Bell whose telephone number is 571-272-1296. The examiner can normally be reached on Monday-Friday 6:30 AM - 3:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on 571 272-1414. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BFB  
February 21, 2006

  
Bruce F. Bell  
Primary Examiner  
Art Unit 1746